

1                   **Protective Sleeve for Use with Extension Bar**

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3                   **Field of Invention**

4     The present invention relates to a protective sleeve for use with an  
5     extension bar.

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7                   **Background of Invention**

8     An extension bar 1 includes a shank 2 and a square insert 6 projecting  
9     from the shank 2. A button 3 is put in the shank 2. A portion of the  
10    button 3 extends from the shank 2. A detent 4 is embedded in the square  
11    insert 6. A portion of the detent 4 extends from the square insert 6. A  
12    mechanism (not shown) is arranged between the button 3 and the detent 4  
13    so that when the button 3 is pushed, the detent 4 is allowed to completely  
14    enter the square insert 6. Therefore, a user will have his or her fingers  
15    hurt by the button 3 if the extension bar 1 is accidentally rotated before  
16    the user takes his or her hand off the extension bar 1.

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18    The present invention is therefore intended to obviate or at least alleviate  
19    the problems encountered in prior art.

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21                   **Summary of Invention**

22    The primary objective of the present invention is to protect the hands of a  
23    user when using an extension bar.

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25    According to the present invention, a protective sleeve is provided for use  
26    with an extension bar. The extension bar includes a detent and a button

1 that can be pressed in order to control the detent. The protective sleeve  
2 defines a hole and an aperture communicated with the hole. The hole  
3 receives the extension bar when the aperture receives the button.

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5 Other objects, advantages, and novel features of the invention will  
6 become more apparent from the following detailed description when  
7 taken in conjunction with the attached drawings.

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9 **Brief Description of Drawings**

10 The present invention will be described through detailed illustration of  
11 the preferred embodiment referring to the attached drawings.

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13 Figure 1 is a side view of a conventional extension bar.

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15 Figure 2 is a perspective view of an extension bar with a protective sleeve  
16 according to the preferred embodiment of the present invention.

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18 Figure 3 is similar to Figure 2 but shows the protective sleeve removed  
19 from the extension bar.

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21 Figure 4 is a cross-sectional view of the protective sleeve of Figure 2.

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23 Figure 5 is another cross-sectional view of the protective sleeve show in  
24 Figure 2.

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26 Figure 6 is a side view of the protective sleeve and the extension bar of

1   Figure 2 held by a user's hand.

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3   Figure 7 is similar to Figure 6 but shows the user's thumb pressing a  
4   button.

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6   **Detailed Description of Preferred Embodiment**

7   Referring to Figures 2 and 3, an extension bar 10 and a protective sleeve  
8   20 are shown. The extension bar 10 includes a shank 11 and a square  
9   insert 15 projecting from the shank 11. A button 12 includes a first  
10   portion extending into the shank 11 and a second portion normally  
11   extending from the shank 11. The square insert 15 includes four facets  
12   formed thereon. A detent 13 includes a first portion put in one of the  
13   facets and a second portion normally extending from that facet unless  
14   pressed. The square insert 15 can be inserted into a square hole defined  
15   in a socket (not shown). How the button 12 cooperates with the detent  
16   13 will not be described in detail for being conventional.

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18   The protective sleeve 20 includes a hole 21 defined in an axial direction  
19   so that the shank 11 can go through the hole 21 so that the protective  
20   sleeve 20 can be attached to the extension bar 10. The periphery of the  
21   protective sleeve 20 consists of a cylindrical portion 25 and a  
22   frustum-shaped portion 22 connects smoothly with the periphery of the  
23   shank 11. The protective sleeve 20 includes a recess 23 defined in the  
24   periphery. Within the recess 23, the protective sleeve 20 includes an  
25   aperture 24 communicated with the hole 21. The aperture 24 is used for  
26   receiving the button 12.

1 Referring to Figures 4 and 5, the recess 23 encompasses the button 12.  
2 A height of the second portion of the button 12 is no greater than a  
3 thickness of the protective sleeve 20. Therefore, the button 12 does not  
4 protrude beyond the protective sleeve 20.

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6 Referring to figure 6, the button 12 is surrounded by means of the  
7 protective sleeve 20. Hence, a user will not push the button 12 by  
8 accident. Moreover, the user will not have his or her hand hurt by the  
9 button 12.

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11 Referring to figure 7, the recess 23 encompasses the user's thumb 30 so  
12 that the user feels comfortable when pressing the button 12. The  
13 frustum-shaped portion 22 of the periphery of the protective sleeve 20  
14 connects smoothly with the periphery of the shank 11 so that movement  
15 of the user's hand from the shank 11 to the protective sleeve 20 can be  
16 smooth and quick.

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18 The present invention has been described through detailed illustration of  
19 the preferred embodiment. Those skilled in the art can derive variation  
20 from the preferred embodiment without departing from the scope of the  
21 present invention. Therefore, the preferred embodiment shall not limit  
22 the scope of the present invention defined in the claims.

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